THE MISSING LINK PROJECT

THE Missing Link

Constructive Ideas for Improving Urban Environmental Performance in Western Canada

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CanadaWest FOUNDATION

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CONSTRUCTIVE IDEAS FOR IMPROVING URBAN ENVIRONMENTAL PERFORMANCE IN WESTERN CANADA

How can we improve the environmental performance of our cities? To help answer this question, the Canada West Foundation examined the range of urban environmental tools that could be put to use in western Canada and summarized the results in *Tools of the Trade: Urban Environmental Improvement Options*. Building on this, we analyzed examples of urban environmental initiatives in western Canadian cities to better understand their application in real world settings and presented our findings in *Bright Spots: Urban Environmental Initiatives in Western Canada*. These reports, combined with a conference that brought together politicians, urban planners, developers, academics and thought leaders, helped us understand why so many good ideas for improving the urban environment do not make it from the drawing board to actual implementation in our cities. This report explores ways to close this gap.

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EXECUTIVE SUMMARY

As long as decisions that affect our urban areas are based on short-term returns, we will never have truly great (not to mention green) cities in western Canada. The smart use of environmental improvement tools such as green roofs, permeable concrete and district energy systems can – over time – lead to lower costs and better environmental outcomes.

However, this is only possible if residents and policymakers shift their focus from the initial costs and challenges of implementing new approaches to the long-term benefits. We have to curb our impatience and be willing to pay upfront for benefits that take time to accrue.

As economic and social service hubs, cities provide an ideal focus for environmental action. The services they provide both consume natural resources and cause harm to the environment.

By creating a healthy urban environment, we help ensure that our cities will be thriving, sustainable economic entities well into the future. Despite this, the numerous tools that exist for improving urban environmental outcomes are often underutilized in western Canadian cities. The missing link explaining this underutilization is the classic problem of ***short-term costs trumping long-term benefits.*** There are real private and public costs to implementing environmental policy. As a result, residents have to be confident that the investment required by green initiatives will pay off in tangible cost savings and quality of life improvements. If they are not, the uptake of green tools will remain sporadic.

This report recognizes the significant environmental achievements of western Canadian cities, but there is more that can be done. Before this can happen, however, a number of concerns expressed by urban policymakers need to be addressed:

- the economic harm that can be caused by environmental policy;
- finding the money to pay for environmental initiatives;
- the lack of municipal capacity and/or authority to act;
- the lack of immediate results from environmental policy; and,
- the lack of support from other levels of government.

The following policy options can help address these concerns while broadening the realm of possibility for urban policymakers:

- ***The development of a long-term green growth strategy that integrates the health of the environment and the economy.*** The strategy should be developed through genuine resident and stakeholder engagement, be a decision-making tool that provides a clear roadmap of where the city should go and how to get there and recognize the jurisdictional challenges cities face vis-à-vis their provincial governments.
- ***The inclusion of more rigorous environmental measures in building codes, the implementation of retrofit programs and environmental certification of new city-owned buildings.*** As significant users of energy and other resources, changing the way buildings are constructed and operated can result in demonstrable improvements to urban environmental performance.
- ***The use of green incentives and pilot projects to encourage environmental action.*** When used wisely, green incentives can promote the use of best environmental practices, spur the market to reach desired outcomes, and find innovative, win-win solutions to urban environmental challenges. The use of pilot projects that clearly demonstrate the "doability" and benefits of green initiatives are essential to convincing skeptical residents, builders and policymakers.

All of these options are subject to a fundamental caveat: they should only be pursued after 1) solid return-on-investment (ROI) analysis confirms that the short-term costs are likely to be outweighed by the long-term benefits; and, 2) appropriate measurement and reporting mechanisms are in place to assess the outcomes of the policy changes. There is a need for governments to partner with the research community to conduct the ROI analysis and to develop appropriate measures of success.

Better data on economic returns and quality of life improvements will, in part, address the missing link, but it will be up to citizens to forego instant gratification in favour of benefits that take time to materialize.

Context

1.1 Urban Policy

More than 6 in 10 western Canadians live in one of the region's nine major urban centres.

Cities develop and implement a range of policies, some of which are intended to manage environmental impacts while others indirectly influence environmental pressures. Where economic priorities, social priorities and environmental objectives do not align, or where limited capital must be allocated among competing uses, difficult choices must be made.

As "creatures" of the provincial order of government, Canadian cities have limited tax bases and limited authority over environmental matters. At the same time, Ottawa and the provinces make policies in many areas that affect the ability of municipal governments to pursue environmental objectives. For example, federal and provincial building codes and related legislation place boundaries around what cities are able to do on this front.

This points to a critical question: should cities have greater authority over the local environment? The answer is beyond the scope of this paper, but the reality is that many of the tools that cities could be using to improve their environmental performance are simply out of their reach. For example, cities in Alberta cannot have their own building code and cannot adopt the national building code. As such, Alberta municipalities are hamstrung by the provincial standard, which is out of date. Cities need to continue the push for greater clarity – on both their part and on the part of their provincial governments – regarding what they can and cannot do, and what they are and are not responsible for, when it comes to the urban environment.

Municipal governments have three main policy areas where they exert direct influence over the environmental pressures their residents create: 1) land use planning; 2) transportation planning; and, 3) city operations.

As "creatures" of the provincial order of government, Canadian cities have limited tax bases and a restricted scope for environmental action.

Land use planning is the process of establishing zoning bylaws, zoning regulations, development plans, re-development plans and application/review processes to ensure that land within a city's boundaries is used to meet an established set of objectives. The process includes measures that protect the natural environment or mitigate negative impacts. Environmental protection is not, however, the only objective of land use planning. Cities face difficult decisions and trade-offs in establishing and implementing these plans. In addition, although cities have the authority in the area of land use planning, what a municipality can and cannot do may be restricted by provincial legislation.

Transportation planning complements land use planning in that it is the key tool that a city has to influence how people and goods get from where they are to where they need to be and what means of transportation they have available to accomplish the task. It includes roads, pathways, public transit systems and traffic management. Transportation planning and urban planning departments can work together to create policies and frameworks that reduce environmental impacts. Alternatively, they can exacerbate existing pressures when a higher priority is placed on short-term economic and political expedients than on environmental protection and long-term efficiency gains.

City operations also have a direct impact on the environment. Cities normally operate water and wastewater treatment facilities and set a range of bylaws, codes and practices to assist in these tasks. Cities can use green procurement, green building programs, communications programs, public transit policies and other measures to promote green practices through their own operations.

If we can improve the environmental performance of our cities, it will have a positive impact on the quality of life of western Canadians. We will be spending less money on heating our homes and driving our cars, we will have healthier, more active lifestyles, and we will be more prosperous in the broadest sense of the word. Not to be overlooked, there will also be some general environmental benefits such as improved air and water quality and stronger natural ecosystems in and around our cities.

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1.3 Rising to the Task

Most cities in western Canada are now attempting to meet both environmental and economic needs at the same time through sustainable development policies and long-term strategies. Nonetheless, short-term needs, competing priorities, limited resources, policy inertia, and a lack of trust in the ability of government to execute often mean that many of the environmental tools available to urban policymakers are underutilized.

Properly designed and implemented environmental policy can produce a significant return on investment in the form of cost savings and measurable quality of life improvements, but this is not as clear as it needs to be to residents and policymakers. The existing evidence needs to be added to and more effectively communicated for the public to fully support the changes and costs associated with new urban environmental initiatives. Until this happens, green roofs will remain novelties, traffic congestion will get worse, new buildings will be less efficient than they could be and so on.

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There are, moreover, private as well as public costs to implementing urban environmental policy. Pretending that these costs do not exist or making people feel guilty for their lifestyles will not generate the public support required for cities to become truly green. The proponents of change need to show that there is a positive snowball effect to environmental action: i.e., that that the initial costs may be high, but over time, the benefits will grow, the costs will go down and tangible quality of life improvements will be realized.

1.4 Policymaker Concerns

There are real environmental, economic and social benefits to be gained when the community as a whole has provided its input and understands and accepts the future scenario it has told its elected representatives it wants. Being an urban policymaker means being able to work though complex matters with choices that are in the best interests of all residents now and in the future.

Having and sticking to a green policy strategy that clearly identifies overall benefits, frankly acknowledges winners and losers and contains stringent measurement and reporting commitments is a tool to proactively address common concerns held by policymakers, such as:

- *Environmental actions can sometimes displace or erode economic activities in another area.* For example, promoting the use of renewable energy may hurt traditional energy suppliers. The strategy has to own the costs it will impose as well as the benefits it will bring.
- *Cost of environmental actions vis-à-vis other priorities.* This is one of the most common concerns of urban policymakers. For example, it can be difficult to justify expenditures for creating bike lanes when drivers are demanding that the roads be repaired. What happens to green projects when you need to repair infrastructure in the wake of a natural disaster?
- *Lack of capacity.* Cities are concerned that, in addition to limited financial resources, they do not always have the knowledge base and technical skills to develop and correctly implement certain environmental policies. If a green policy is implemented improperly, there can be unintended consequences that negate the initiative's best intentions and result in negative political consequences. There is also the issue of the cost of, and ability to, enforce new environmental regulation.
- *No immediate pay-back.* The political concern is that stakeholders and residents will not see the value of the investment and will complain that tax dollars should be redirected to more tangible projects.
- *Going it alone.* Cities are not islands. They are environments within environments and jurisdictions within jurisdictions. Creating a healthy environment is seen by cities as a shared problem among federal, provincial and municipal jurisdictions, but often with less help from senior governments than is needed.

The political concern is that stakeholders and residents will not see the value of the investment and will complain that tax dollars should be redirected to more tangible projects.

1.5 Green Economic Growth

A number of highly respected policy organizations have put significant effort into providing policy frameworks that can assist cities to work through their sustainable development needs. We offer the insights of two policy groups to show that there is a broad base of policy support, including evidence and good examples of successes that policymakers can consider and adapt to local needs, interests and conditions. Their approaches can help simplify what are very complex issues by providing a manageable framework with practical actions and practical outcomes.

The Federation of Canadian Municipalities (FCM) works on behalf of municipalities to assist them to better collaborate with the senior orders of government in achieving local and national environmental and economic goals. Its 2011 report, *Building Canada's Green Economy: The Municipal Role*, the FCM promotes federal-municipal partnerships so that Canada can be a world leader in the transition to a green economy. It identifies the following key priority areas where municipalities have a significant degree of control and demonstrate considerable leadership in creating the green economy:

- sustainable transportation;
- energy efficiency in buildings;
- renewable electricity and conservation;
- wastewater treatment and water conservation;
- efficient urban land use; and,
- solid waste management.

The FCM has demonstrated that investment in green projects has tangible benefits. The Green Municipal Fund (GMF) is a $550 million federal endowment to the FCM that funds projects in the brownfields, energy, transportation, waste, and water sectors. To date, the GMF has leveraged $544.3 million in government spending into a total investment of $3.1 billion through partner investments. These projects have generated 32,650 jobs and contributed $3.7 billion to GDP.[1] The GMF provides an illustration of the impact that targeted green spending can have. Energy and water projects have accounted for more than two-thirds of the investment to date.

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At the international level, the Organization for Economic Co-operation and Development (OECD) published *Cities and Green Growth: A Conceptual Framework*. Its purpose is to begin the spadework to guide a larger OECD Green Cities program by pushing the case for an "urban green growth agenda." The concept of urban green growth can be used as a means of assuaging the main concern associated with environmental policymaking: curbing environmental impact while maintaining competitive advantage and social licence.

[1] Note that the economic impacts stated relate specifically to the projects funded and may not be incremental to investments that would otherwise have taken place, or to the impact of alternative uses of the capital invested.

Interactions between the economy and the environment are much more visible at the city scale than regionally or nationally.

The OECD believes that municipalities, with their environmental impacts, density, energy use, economic activity and concentrations of highly skilled people are central to advancing global green growth. It is of the view that the interactions between the economy and the environment are much more visible at the city scale than regionally or nationally. The OECD defines green growth in an urban context as follows:

> *Urban green growth means fostering economic growth and development through urban activities that reduce negative environmental externalities, the impact of natural resources and the pressure on ecosystem services. The greening of the traditional urban economy and expanding the green urban sector can generate growth through increased supply and demand, job creation and increased urban attractiveness. These effects are in part the result of stronger interactions at the urban level among economic efficiency, equity and environmental objectives* (OECD 2011).

The OECD echoes the FCM on many of the challenges and opportunities for urban green policy: energy use, mobility, water management, land use, pollution prevention and green services. Policy tools available to cities include regulatory authority and enforcement, direct expenditures and incentives, technical assistance, education and advocacy.

2. Policy Options

2.1 The development of a long-term green growth strategy that integrates the health of the environment and the economy.

All city mayors and councils desire vital, healthy, attractive cities for their residents now, and well into the future. Many western Canadian cities are experiencing rapid growth with attendant pressures on their environments, social supports and overall economic well-being. Most have invested significant resources in developing long-term strategies for sustainable growth including community and stakeholder consultation. In addition to resident engagement, industry, business, non-government organizations and institutions all need to participate in creating a vision for cities well into the future.

A community-endorsed plan provides the decisionmaking framework that enables new environmental policy and allocates tax dollars for its achievement.

Managing concerns about environmental policy can be made with greater confidence and less conflict by having a "roadmap" to provide direction on where you want to go and how to get there. A community-endorsed plan provides the decisionmaking framework that enables new environmental policy and allocates tax dollars for its achievement. It does not really matter what the plan is called, but it should include, at minimum, these elements:

- a broad spectrum of environmental considerations – air, land, waste, water, biodiversity, energy, etc.;
- economic growth;
- a vision of the future;
- goals or outcomes with targets and indicators;[2]
- a capacity-building plan including training for city staff;
- an inventory of the roles and responsibilities that the city wants to take on that indicates where authority from the province is needed and why it should be granted;
- an action plan and an implementation plan;
- a way to demonstrate that progress is being made; and,
- a communications plan.

A successful plan needs to be enthusiastically communicated, endorsed and boosted on an ongoing basis by the mayor, council and city staff. Cities have limited financial resources, but within their immediate boundaries and their regions, cities have numerous spheres of influence where they can affect change through their example and their advocacy, rather than through programs and regulation. One example of a city's ability to influence green growth is green procurement – the use of a city's purchasing power to build growth in the environmental sector and encourage competition for green products and services. This can be done on a local, regional and national basis. By developing, implementing and promoting green urban growth plans, cities will have a positive influence on the behaviour of residents, industry, business and institutions. The challenge for cities is to stick to the plan when there are competing pressures.

[2] Urban environmental indicators are not well developed for certain environmental aspects, which is a barrier to understanding the current state and tracking changes over time. There is a need for governments to partner with the research community to address this deficiency.

To this end, long-term green growth strategies and subsequent green policies must be linked to the municipal budgeting process. If the long-term strategy is not fully integrated in the development of municipal budgets, the costs of implementing the strategy will appear to be add-ons. This goes beyond an action and implementation plan, and is key to ensure that priorities are set in advance and that dollars are allocated. For example, in the 2012-2014 budget and business plan cycle, the City of Calgary sought to fully integrate its 2020 Sustainability Direction to ensure that sustainability goals and objectives were central to work undertaken by the City over the three-year period.

Green Procurement

Green procurement is used to reduce the environmental impact of municipal operations. Many cities now have green purchasing policies and guidelines for employees. Green procurement should consider value for money and environmental performance, such as reducing GHG emissions and solid waste, improving energy and water efficiency, reducing use of hazardous chemicals, and expanding the market for green products and services. Some examples include:

- alternative fuel vehicles in city fleets including use of electricity, compressed natural gas, hydrogen fuel cells and propane;
- cleaning services that use non-harmful products;
- environmentally friendly methods and products for insect and weed control;
- recycled materials in road construction; and,
- products with environmental certification standard labels, such as:
    - Green Seal Certified
    - Sustainable Forestry Initiative
    - Green Guard
    - Cradle to Cradle
    - Rainforest Alliance
    - Eco-Logo
    - Environmental Choice
    - Design for the Environment (EPA)

The challenge for cities is to stick to the plan when there are competing pressures.

A good illustration of what can happen when cities make environmental action a clear priority can be found in the City of Vancouver, which has set the goal for itself of becoming the world's "greenest" city by 2020. By setting a clear, quantifiable goal with a deadline it has become possible for the city to enact a number of very complex policy and procedure overhauls. City workers know what their job is and what the priority should be when they encounter a barrier. This has resulted in a city that leads the country, if not the continent, when it comes to environmental performance and supportive government policy. This plan is not without controversy, though, which has been evident with decisions to close a busy street to accommodate cyclists and to increase densification by allowing higher than usual multi-story buildings in established neighbourhoods.

Vancouver Aims to be the World's Greenest City

Vancouver intends to become the greenest city in the world by 2020. Its Greenest City Action 2020 Plan calls for the city and its residents to:

- double the number of green jobs over 2010 levels;
- double the number of companies engaged in greening their operations over 2011 levels;
- reduce community-based GHG emissions by 33% from 2007 levels;
- require all buildings constructed from 2020 onward to have carbon neutral operations;
- reduce energy use and GHG emissions in existing buildings by 20% over 2007 levels;
- make more than 50% of trips by foot, bicycle or public transit;
- reduce the average distance driven per resident by 20% from 2007 levels;
- reduce solid waste going to the landfill or incinerator by 50% from 2008 levels;
- have all residents living within a 5-minute walk of a park, greenway or other green space;
- plant 150,000 new trees;
- reduce the city's ecological footprint by 33% from 2006 levels;
- meet or beat the strongest of provincial, national and international drinking water standards;
- reduce per capita water consumption by 33% from 2006 levels;
- meet or beat the most stringent provincial, national and international air quality guidelines; and,
- increase city-wide and neighbourhood food assets by a minimum of 50% over 2010 levels.

Source: www.vancouver.ca/files/cov/Greenest-city-action-plan.pdf

Cities, however, need the capacity to undertake green urban growth. Capacity includes not only financial resources, but also the human capital, technical and physical infrastructure, time and organization needed to achieve the goals. Human capital is the supply of technical and social competencies, knowledge, and skills – including creativity – in its workers that any economy requires to thrive. An effective green growth agenda involves the inclusion and integration of growth policies such as those on human capital, infrastructure and innovation, which all contribute to local and regional growth.

Cities have the opportunity to create a virtuous circle toward green growth by integrating a green jobs plan for successful implementation and ongoing green growth. They can do this, for example, by understanding the inventory of knowledge, skills and abilities required and the community assets available to deliver necessary programs. The time to initiate capacity building is during the strategic planning process, by ensuring that educational and training institutions, unions, business and industrial associations and others are actively involved.

Cities have the opportunity to create a virtuous circle toward green growth.

Urban green growth policies ensure that along with the green growth there is attention to economic growth, in particular environmental innovation and entrepreneurship. The OECD says that innovation rather than "business as usual" is needed fulfill a green economy's need for new ideas, new business approaches, new markets and new jobs. "Innovation" is a somewhat esoteric term that has different meanings in different contexts. It can be incremental, disruptive or radical. It can require significant research funding. It can deal with demand-side and supply-side. It can be provided through industry and/or institutions, among other avenues.

2.2 The adoption of more rigorous environmental measures in building codes, the implementation of retrofit programs and environmental certification of new city-owned buildings.

Buildings account for close to 40% of total end use of energy globally.

Residential and commercial buildings are responsible for a large share of urban energy consumption and GHG emissions. Buildings account for close to 40% of total end use of energy globally (Laustsen 2008). In the United States (where buildings account for 39% of total energy consumption), residential buildings accounted for 54% of that total while commercial buildings consumed 46% in 2005. It is estimated that the average household in North America spends at

least $2,000 a year on energy bills (US Environmental Protection Agency). All of this indicates that if buildings were made more energy efficient, the potential savings – both in terms of energy and in dollars – would be significant.

Building codes are the rules that specify the minimum acceptable standards for the construction, renovation and demolition of buildings. They can also target building design, energy retrofits and new technology. Updating building codes to focus on energy and environmental considerations can yield measurable results. It is important to remember that the primary purpose of building codes is to ensure the safety and longevity of buildings using techniques and standards that have been thoroughly tested and that can be widely adopted by stakeholders. Hence, including environmental measures in building codes should be not be seen as a way to push aggressive innovation but rather as a means of ensuring that vetted best practices are broadly applied.

The federal and provincial governments and some cities along with other organizations have programs to encourage energy efficient retrofits. These programs are primarily focused on energy systems and equipment found inside the building.

Including environmental measures in building codes should be not be seen as a way to push aggressive innovation but rather as a means of ensuring that vetted best practices are broadly applied.

All four western provinces offer programs which provide subsidies or grants for retrofits. These programs may be standalone or offered jointly with other governments (federal, municipal) or agencies such as power corporations. It should be noted that the provinces, like municipalities, are now requiring new or retrofit government buildings or buildings being constructed with government funding be built to LEED and BOMA BESt standards. (This is discussed in more detail below.)

In Canada, regulating building construction is a provincial responsibility. The federal government produces a National Building Code,[3] usually updated every five years, which can serve as a template for provincial governments. In many cases the provinces adopt this model, giving it legal status. Some provinces adopt the model with slight modifications to suit their particular geographic circumstances or economic needs or to move to a higher standard. (There are a few cases where municipalities, such as Vancouver, have been allowed by the province to write their own building codes.)

[3] The National Building Code is part of a suite of codes developed by the federal government. Collectively these are known as the National Model Construction Codes and include: National Building Code, National Fire Code, National Plumbing Code, National Energy Code for Buildings, National Farm Building Code of Canada and, up until 2012, the Model National Energy Code of Canada for Houses. Post-2012, this final document will no longer be published separately. Instead, provisions for dealing with energy efficiency in housing and small buildings will be incorporated into Part 9 of the National Building Code.

The status of building codes with respect to energy efficiency measures across western Canada varies somewhat. British Columbia has the most stringent environmental measures in place, followed by Manitoba, Alberta and Saskatchewan. Both British Columbia and Alberta publish their own building codes based on the national model. Manitoba and Saskatchewan generally adopt the national codes. Manitoba has at times made anticipatory amendments to their code. To date, Alberta and Saskatchewan have not adopted the most recent national model and are still relying on the 2005 template.

Vancouver has one of the most environmentally rigorous building bylaws in North America. The bylaw is enabled under a provincial statute, the Vancouver Charter. The City of Vancouver has put mandatory environmental regulations into its code since 2006 and it requires all new one- and two-family homes to have, for example, energy saving windows, R-12 under-slab insulation, dual-flush toilets and be equipped for electric cars. Additionally, all new commercial developments need to adhere to a US-based energy consumption standard called ASHRAE (Advanced Energy Design Guides) 90.1. Since implementation, Vancouver has seen more than a 20% reduction in the carbon footprint of its new buildings, making them nearly 25% more energy efficient than Canada's minimum national requirements (Paperny 2012).

Vancouver has one of the most environmentally rigorous building bylaws in North America.

But, whether it is enabling provincial legislation, prevailing political culture or public pressure, not all cities can emulate what is being accomplished in Vancouver. Each city has its own environment and its own priorities. Cities must judge how to balance energy conservation, emissions control and market forces. For example, officials with the City of Edmonton are confident that the market is considerably ahead of provincial and national building codes and that Alberta's update will still lag behind what industry and real estate developers are achieving in working toward net zero energy. However, Edmonton officials also admit that updated regulation would spur activity to even greater heights.

One way of encouraging individuals, companies and organizations to go above and beyond the regulatory minimums is to encourage environmental labeling. Environmental labeling for building construction is already fairly common. Examples to analyze based on local needs and conditions, include:

- BOMA BESt construction and operation standards for energy and environmental performance in existing commercial buildings;
- ASHRAE – Advanced Energy Design Guides for small retail buildings;
- EnerGuide for houses, Green Globe for a range of buildings; and,
- LEED construction and operation standards.

On average, studies have found that LEED buildings are 25-30% more efficient with respect to energy use than average buildings.

LEED (Leadership in Energy and Environmental Design) works by awarding points across five major categories: sustainable sites; water efficiency; energy and atmosphere; materials and resources; and indoor environmental quality (with additional points for innovation in design). Based on the number of points obtained, buildings or sites are awarded a certification level (Certified, Silver, Gold or Platinum). Buildings and projects that meet these criteria are then encouraged to advertise their environmental accomplishments. This gives prestige, community goodwill and social licence to the companies that have invested the extra time and money into creating environmentally responsible buildings. On average, studies have found that LEED buildings are 25-30% more efficient with respect to energy use than average buildings (Turner and Frankel 2008).

Perhaps the easiest way for governments to encourage environmental labeling is to lead by example. Green building can, when it reaches a certain critical mass, become a virtuous cycle where an increasing number of builders, contractors and product suppliers become experts in green materials and construction techniques. This can also affect consumer demand if more and more people see the benefits of living and working in greener buildings.

Perhaps the easiest way for governments to encourage environmental labeling is to lead by example.

Many governments in Canada already do this. The governments of Alberta and Manitoba require that all new government-funded buildings must meet or exceed LEED Silver level of certification. The Government of British Columbia requires government buildings to be LEED Gold level. In many cases, the cities in each of the provinces match the requirements of the province they are in (see Figure 1).

FIGURE 1: ENVIRONMENTAL LABELING OF NEW GOVERNMENT BUILDINGS

PROVINCE/CITY	POLICY	REQUIRED LEVEL
Government of Canada	No policy	--
British Columbia	Energy Efficient Buildings Strategy	LEED Gold
Vancouver	Green Buildings Policy	LEED Gold
Victoria	Green Building Policy	LEED Silver
Alberta	Green Building Policy	LEED Silver
Calgary	Sustainable Building Policy	LEED Gold/Silver
Edmonton	Green Building Policy	LEED Silver
Saskatchewan	No policy	--
Saskatoon	No policy	--
Regina	No policy	--
Manitoba	Green Building Policy	LEED Silver
Winnipeg	Green Building Policy	LEED Silver

There are two notable exceptions to this general trend. Currently, the Government of Saskatchewan does not have a green building policy and neither do the two major cities of that province. On the other end of the spectrum, the City of Vancouver mandates that not only do all government-funded buildings meet LEED Gold certification standards but also that all new commercial and institutional buildings in the city must meet this standard. As a direct result of this, Vancouver has the highest number of LEED certified buildings per capita in North America.

Research into LEED certified buildings shows that the cost of building is slightly higher but that the energy savings are significant. For example, the City of Calgary's Water Centre – which is certified at a LEED Gold level – is estimated to save taxpayers 40% in operating costs through reduced energy demand. The incremental investment to reach the LEED standard is expected to pay for itself within 15 years.

Green living and working conditions are in high demand in Canada. Recent studies show that LEED certified buildings command significantly higher rental rates. Some commercial and residential tenants are beginning to demand LEED buildings.

BOMA (Building Owners and Managers Association) BESt (Building Environmental Standards) is another respected assessment and certification program for existing, occupied commercial buildings. It is delivered through 11 local BOMA associations across Canada, with offices in Winnipeg, Regina, Calgary, Edmonton and Vancouver. BOMA BESt's critical assessment framework includes environmental performance and management on the following areas: energy; water; waste reduction and site, emissions and effluents; indoor environment; and environmental management system. BOMA BESt has four levels of certification increasing in environmental rigour for building management, operations and maintenance.

In July 2013, BOMA reported that the energy consumption in its certified buildings is 16% better than the national average. In addition, BOMA BESt buildings have avoided emitting 160,240 megatonnes of CO^2, the equivalent of removing more than 33,000 cars from the road for one year. These results are based on energy and environmental performance data of 455 buildings, representing nearly 100 million square feet. (BOMA BESt Press Release, July 8, 2013).

2.3 The use of green incentives and pilot projects to encourage environmental action.

Green incentives are, quite simply, benefits that are put in place to encourage developers, individuals and companies to go above and beyond the regulated environmental minimum. The idea is that if a company, for example, was willing to put environmentally significant attributes into their building, they would be rewarded in some way. This reward could include a relaxation in certain restrictions, a prioritized permitting process or even financial and/or tax incentives.

The idea of incentives is not a new one and many western Canadian cities use them to encourage the types of development they want to see in certain areas.

Green incentives, while they can be used to achieve a number of goals, can be a particularly helpful tool for cities looking to increase their density and encourage environmentally sound building practices. By encouraging higher density development, cities are able to reduce dependency on private vehicles, make more efficient use of land and reduce the environmental and fiscal costs of providing service, such as transit and power, to new developments. High density development can take a number of forms ranging from looming high rise buildings at one extreme to multi-family units and mixed commercial and residential developments at the other.

The idea of incentives is not a new one and many western Canadian cities use them to encourage the types of development they want to see in certain areas. The City of Calgary, for example, is currently proposing to update the bylaws governing the city's downtown core to include "incentive density." This would give developers additional building floor area if they agree to provide amenities like public squares, indoor parks, public art, cultural spaces and skywalks between buildings. It is also proposing density incentives for green building features such as environmental roofs, green walls, bioretention structures, district energy connection ability, on-site cogeneration, electrical vehicle charging stations and additional bicycle parking stalls.

Incentives can encourage the commercialization of green technologies, which over time creates a normalization of environmental development in a city.

The advantage of these types of programs is that they have the potential to create win-win situations for individuals, organizations, cities and the environment. Incentives can help align the goals of developers with the environmental mandate of Canadian cities and at the same time encourage innovation and the commercialization of green technologies, which over time creates a normalization of environmental development in a city.

North Vancouver, Vancouver and Calgary are among the cities that use density bonusing as a means of meeting community energy reduction targets. Density bonusing provides an incentive to a property developer to achieve a "bonus" of building floor space that surpasses a base threshold of normally permitted density. In turn, the developer must meet energy performance standards or other community priorities, such as green space. The Province of BC offers a tool kit for planning and implementing density bonusing.[4]

[4] www.toolkit.bc.ca/tool/density-bonusing.

However, density bonusing is not a panacea and has proved to be ineffective in some areas. Outside of the commercial core of a city, residents may be resistant to increased density. As a result, developers may be unwillingly to utilize density bonusing for fear of project appeals and delays. Community opposition is a significant barrier to higher density redevelopment projects despite the municipal policy that may be in place. Density incentives are more likely to have uptake in the commercial core and in new development areas. Where density is not the answer, other incentives such as tax incremental financing may be effective (e.g., for smaller development areas such as transit supported redevelopment projects). The point to stress is that the incentives have to be tailored to the actual situation on the ground.

Incentives that provide financial rebates for environmental action on a first-come-first-served basis may end up costing cities a lot of money and fail to deal with the underlying environmental issue. The City of Toronto provides an interesting example. In 2006, the city launched a rebate program for green roofs as a way to deal with some of the urban heat island effect[5] caused by a concentration of large buildings. This program rebated approximately 15% of the costs of green roof installation as a way to encourage their use in the city. The problem was that many of the people who signed up first were putting green roofs on residential properties – which were not significantly contributing to the problem. As a result of the design, the green roof rebate program had minimal impact on the heat island effect in Toronto and yet cost the city around half a million dollars. In response to this, in 2010, the city stopped the rebate program and opted for a regulatory solution with a bylaw requiring green roofs on new commercial, industrial and residential buildings larger than 2,000 m^2 (Mitrovic 2010). This example illustrates the challenge with incentive programs – unless they are properly designed, they can be quite expensive and have little environmental impact.

Incentives that provide financial rebates for environmental action on a first-come-first-served basis may end up costing cities a lot of money and fail to deal with the underlying environmental issue.

The bottom line is that green incentives must be properly designed and applicable to the development context if they are going to be successful in increasing density and encouraging environmental building. Successes have been particularly evident when there is a suite of incentives that can accommodate the nuances and complexities of buildings in western Canadian cities and when they are reinforced with effective environmental regulations. Given this, green incentives should be used more extensively by western Canadian cities to encourage environmental action.

[5] Urban heat island effect is a phenomenon where metropolitan areas are significantly warmer than surrounding rural areas due to human activities. The main cause of this is the modification of the land surface by urban development, which uses materials like concrete that effectively retain heat. A secondary contributor is the waste heat that is generated by energy usage in metropolitan areas. Urban heat island has been shown to negatively affect air and water quality in urban areas and impact weather patterns around large cities. For more information on the impact of urban heat islands on prairie cities, see the University of Regina's paper "Urban Heat Islands." http://esask.uregina.ca/tmc_cms/modules/customcode/includes/print_entry.cfm?entryid=7356FACC-1560-95DA-4309158B57EA9C280.

Urban policymakers should take some time to understand the pay-backs of innovation and how it can be actively used to forward their green growth agendas. They can facilitate innovation by approving pilot projects. Use of pilot projects is a practical way to test the feasibility of proposed actions and increase the credibility of the approach. Besides testing how an idea might perform according to stated goals, a pilot can be used to study things like unforeseen costs and implications, and community and stakeholder acceptance and use. After a period of time and a critical evaluation of the pilot's results, adaptations can be made to ensure goals are met, other policy options may be chosen, or the idea may be abandoned if unworkable.

3. Conclusion

Each of the options outlined in this report is *relatively* easy to implement and can have a positive impact on the environmental performance of western Canadian cities. These particular options were highlighted because they can help overcome the barriers created by outdated government regulation and lack of environmental prioritization, both of which were identified in previous research as significant stumbling blocks to the increased uptake of urban environmental tools.

Notwithstanding the many good things western Canadian cities have done to date to improve their environmental performance (see the Appendix for some examples), transforming our cities to become even more sustainable is a huge opportunity for western Canada. Not only will there be myriad health and social benefits, but there will also be significant economic and political benefits. In terms of the larger environmental policy file, working to transform our cities is one of the easiest places to start. Because cities are population and service hubs, small policy changes can have a huge impact on the lives of western Canadians and the overall environmental performance of the region.

However, if the decisions that affect our urban areas are largely based on short-term returns, we will never have truly green cities in western Canada. Residents and policymakers need to shift their focus from the initial costs and challenges of implementing new approaches to the long-term benefits. We have to curb our impatience and be willing to pay upfront for benefits that take time to accrue.

Properly designed and implemented environmental policy can produce a significant return on investment in the form of cost savings and measurable quality of life improvements, but this is not as clear as it needs to be to residents and policymakers. The existing evidence needs to be more effectively communicated and the actual results of local initiatives need to be determined and routinely reported for the public to fully support the changes and costs associated with new urban environmental initiatives. Until this happens, green roofs will remain novelties, traffic congestion will get worse and new buildings will be less efficient than they could be.

The proponents of change need to show that there is a positive snowball effect to environmental action.

There are, moreover, private as well as public costs to implementing urban environmental policy. Pretending that these costs do not exist or making people feel guilty for their lifestyles will not generate the public support required for cities to become truly green. The proponents of change need to show that there is a positive snowball effect to environmental action: i.e., that that the initial costs may be high, but over time, the benefits will grow, the costs will go down and tangible quality of life improvements will be realized.

To overcome the tendency of short-term costs to trump the pursuit of long-term benefits and to assure residents and businesses that those long-term benefits are actually being realized, cities must heavily invest in the evaluation of new environmental initiatives and clearly report the results to residents. Simply saying "it's good for the environment" or "it's the right thing to do" is both not effective and patronizing to those who have to pay for the changes or adopt new behaviours as a result of them. The proponents of change have to work very hard to make sure that policymakers and residents are confident that the investment of time and energy required by green initiatives will pay off. If they are not, uptake will be remain sporadic.

APPENDIX:

Examples of Urban Environmental Initiatives in Four Western Canadian Cities

Saskatoon

Integrated Growth Plan

Saskatoon is deeply involved in planning for the next 50 years. Its *Integrated Growth Plan* (IGP) contains nine strategies related to land use and transportation, designed to grow the city to a population of 500,000, from its current 220,000. The plan is being developed with resident and stakeholder involvement and in partnership with five neighbouring communities and rural municipalities. It is meant to ensure that the region manages its remarkable growth in a sensitive, coordinated and sustainable way. The IGP's implementation plan is expected to be approved in 2015.

Saskatoon is learning from the experiences of other cities where rapid outward growth has had negative consequences in infrastructure and servicing costs, reduced investment in the city core, created traffic congestion and attendant environmental impacts. Saskatoon's manager of planning and development says that Saskatoon's motives are not just cost-driven. Key priorities are a smaller ecological footprint and a more efficient lifestyle for residents. He credits an engaged city council, enthusiastic stakeholders and resident demand as drivers for a plan that envisions a sustainable way to grow.

In addition to guidelines for "strategic infill" in core city areas, Saskatoon's draft plan envisions newly developed, integrated "complete neighbourhoods" where a high quality of life and minimal environmental impact are paramount goals. These would feature new employment, retail and service hubs, maximized use of transit services and reduced vehicle use. They would allow more leisure time and interaction among residents for a healthy and creative lifestyle.

Saskatoon might further explore green business hubs within these communities to contribute to green growth and economic diversity.

Financing Future Growth Study

Saskatoon's administration has been asked by council to address the issue of increasing property taxes given the large amount of new development in the city; i.e., are the city's collective revenues leading to "growth paying for growth?" Over the next year, the city will be analyzing the potential cost savings within the IGP vs. the current growth model and will provide options for financing growth, including changes to the city's levy structure; redirecting funds from current revenue sources toward key elements of the IGP, such as rapid transit stations and streetscape improvements; and new incentive programs, including environmental, to help attract private investment in line with IGP objectives.

Regina, Edmonton and Calgary are undertaking similar studies, which should provide these cities with an opportunity to share methodologies and results.

Energy and Greenhouse Gas Management Plan

Since 2004, Saskatoon has been engaged in a multi-sector project called Road Map 2020 to reduce GHG emissions. A pilot neighbourhood of City Park has been selected in which to build awareness and motivate residents to reduce vehicle use and use more sustainable transportation choices. As well, Saskatoon's Energy and Greenhouse Gas Management Plan, established in 2009, is part of the FCM's Canadian Municipalities Partners for Climate Protection Program (PCP). At this stage, Saskatoon has established PCP targets to:

- reduce corporate (municipal) emissions by 10% below 1990 levels by 2013; and,
- reduce community emissions by 6% below 1990 levels by 2013.

After its business plan is approved in the fall of 2013, Saskatoon will be monitoring progress and reporting results.

Green Incentives

Through the Evergreen Environmental Incentives Program, Saskatoon offers incentives to home builders and individuals to promote environmentally sustainable building and practices. They include:

- a $500 administrative cost rebate to home builders and individuals for homes that are certified through the ENERGY STAR Qualified Program, the Energuide for New Homes 80 program or the LEED Canada for homes program;
- one outdoor composter per lot to promote sustainable organic waste practices;
- one rainwater collection barrel per lot to reduce potable water use; and,
- two Saskatoon berry bushes per lot to promote xeriscaping practices, thereby reducing water use.

To promote more energy efficient homes, the city's Show Home Policy for building contractors includes only those homes certified through one of the above-noted programs.

To encourage development on existing brownfield sites and the re-use of vacant buildings, Saskatoon provides financial and/or tax based incentives to eligible owners/developers. Grants of between $15,000 and $200,000 are available, depending upon the type and use of building. The vacant lot and adaptive re-use incentives system provides a five-year tax abatement based on an evaluation and point system, up to a maximum amount.

Edmonton

Strategic Plans

Edmonton has a vision and goals to guide city decision-making to the year 2040, articulated in its overarching strategic plan, *The Way Ahead*. Its four underpinning principles are:

- integration – the interrelatedness and complexity of urban environments;
- sustainability – economic, environmental, social and financial;
- livability – a city that is welcoming, diverse, safe, clean and well-organized; and,
- innovation – continuous improvement, new technologies, products and ways of operating.

One of the plan's 10-year strategic goals is to preserve and sustain Edmonton's environment through the city's own practices and by encouraging and enabling the practices of others. *The Way We Green*, developed with public participation, is the plan that sets out desired environmental outcomes, performance measures and three and 10-year targets. Although the implementation plan is still in development, a selection of its actions includes:

- *Healthy ecosystems for land:* harmful substance reduction, integrated pest management, wetlands conservation, a brownfield use plan, densification of mature neighbourhoods, preservation and restoration of ecological areas, continuous performance improvement, and citizen education.
- *Healthy ecosystems for water:* work with Alberta to protect and manage the North Saskatchewan River, regulations and guidelines to enhance watershed protection, a stormwater control strategy, reduced wastewater loadings into the river, and water conservation.
- *Healthy ecosystems for air:* work with Alberta and stakeholders on air quality goals and monitoring.
- *Energy and climate change:* a city-wide energy strategy including renewable energy, green buildings, outdoor lighting, GHG management, green infrastructure and sustainable fleet management, integrated transit and land use guidelines, integrated high density development and transit centres, high energy efficiency standards for city buildings, an efficient, effective, accessible and integrated transit system, leading in new energy technologies and carbon-neutral city operations.
- *Resilient food and agriculture systems:* a strategy for increased access to local food.
- *Zero waste:* use of incentives, education and partnerships to reduce solid waste of residential and non-residential sectors and divert waste from landfill.

- *Foundation for success:* implement ISO 14001 environmental management systems in high impact operations, evaluate major decisions, including purchasing, in relation to sustainability and resilience principles, set targets for reduction of ecological footprint per person.

Edmonton's Energy Transition Discussion Paper and Process

The Way We Green sets goals for Edmonton to become a carbon neutral, sustainable and energy-resilient city. The city has partnered with the Pembina Institute and HB Lanarc-Golder, a sustainability planning and design firm, to develop a discussion document on the different options to meet these goals. Research and modeling show that it is possible for Edmonton to have 80% lower GHG emissions and 25% lower energy use by 2050. The paper's six goals are:

- reduce the GHG intensity of the provincial electricity grid;
- increase the density of mature neighbourhoods; e.g., compact, mixed-use, transit-oriented neighbourhoods;
- reduce energy use in large industrial facilities;
- increase the uptake of distributed energy generation; e.g., solar and natural gas heat and power, through barrier removal, capacity building, incentives and regulations;
- increase energy efficiency of new and old buildings; and,
- reduce gasoline and diesel used in vehicles.

The goals and actions in the discussion paper have been recommended to city council by the Citizens' Panel on Edmonton's Energy and Climate Challenges. The panel is an innovative "citizen deliberation" process where representative citizens have been appointed to learn about the issue, weigh choices and trade-offs, and make recommendations to decision-makers. The process reflects the City of Edmonton's views on representative democracy and belief that people have a right to be involved in decisions that affect them. For more information on the discussion paper and process please refer to **http://www.edmonton.ca/environmental/programs/citizens-panel-energy-climate.aspx**

Green Incentives

Edmonton is looking at its full range of statutory tools and those of other orders of government, such as regulations, taxes and licenses, and applying them or lobbying for them to achieve its environmental plan's goals. On the subject of incentives, Edmonton's manager of corporate environmental management says their preference is to try to shift the market as a whole until the desired behavior or actions become the norm. City leadership and awareness-building is a key part of transition. Providing supply-side services, such as industry training, is equally important to financial incentives to achieving desired outcomes. The time to regulate, he says, is when the market has caught up.

Winnipeg

A Sustainable Winnipeg

A Sustainable Winnipeg is a 25-year integrated strategy that is part of the umbrella plan, OurWinnipeg, approved in 2011. Other elements of OurWinnipeg include: Complete Communities; Sustainable Transportation; and Sustainable Water and Waste. These plans may be found at http://winnipeg.ca/interhom/CityHall/OurWinnipeg/

The following outlines the key goals and directions in *A Sustainable Winnipeg*:

1. **Leading by example:**

- build a culture of sustainability within the city's public service through learning opportunities, new tools and a code of practice for sustainable city operations;
- incorporate sustainable practices into civic operations, programs and services, such as greening the city's fleet operation;
- promote citizen awareness, for example, by recognizing and rewarding sustainable planning and action by businesses and citizens;
- establish partnerships with communities, businesses and other public sector agencies to achieve joint goals;
- achieve prosperity through a strategy that recognizes the connection between competitiveness, sustainability, attractiveness and well-being; and,
- take action to sustain a vibrant and resilient Winnipeg, including safety and other social inclusion initiatives.

2. **Tracking Progress:**

- the city, with public involvement, will develop a set of indicators and measures to track progress and to use as a planning and decision-making tool;
- an annual sustainability report will be produced; and,
- apply the Bellagio STAMP (SusTainability Assessment and Measurement Principles) as a tool to help choose appropriate things to measure (this tool was developed by an international group of measurement practitioners and researchers brought together by the International Institute for Sustainable Development).

3. **Integrate sustainability into internal decision-making by ongoing planning, performance evaluation and developing new policies and practices.**

Green Building Policy

One example of implementing *A Sustainable Winnipeg* is Winnipeg's Green Building Policy which requires that all newly constructed buildings and major additions with a footprint greater than 500 m^2 be:

- certified by a recognized green building standards certifier, such as LEED at the silver level or better;
- deliver improved energy performance and be certified by the Manitoba Hydro Power Smart New Buildings Program;
- use lifecycle costing to ensure maximum value of projected capital and operating costs and savings in financial decision-making and reporting; and,
- include on the design team an expert in green building and integrated design.

Fort Rouge Rail Yards Housing Development

The Fort Rouge Rail Yards housing development is an example of how urban land use policy can be environmentally sensitive. The $200-million brownfield infill housing project is situated on the old CN Fort Rouge Yards near Winnipeg's downtown. It is being touted as the city's first transit-oriented development that is designed to reduce urban sprawl, increase tax revenues and improve urban landscapes. It will feature a mix of mid- and high-density residential buildings. Higher population densities around transit stations encourage more transit ridership. In turn, it is believed that a more popular and well-travelled rapid transit corridor will help build a strong neighbourhood and increase property values. The public is being consulted on how to best incorporate features such as walking paths, new green spaces and eco-sensitive building standards. Winnipeg's City Council recently approved a rapid transit station for which the developer is paying 57% of the estimated $3.8 million cost. The station will be an added plus for attracting prospective residents and making the development a success.

Surrey

Sustainability Charter

In 2008 the City of Surrey adopted its *Sustainability Charter* which, at every opportunity, is enthusiastically promoted by the Mayor, Council and city employees. They are justifiably proud of the community's commitment to the principles of social, environmental and economic sustainability as the foundation of all city decision-making. The charter is a roadmap for integrated urban green growth to guide all city actions. Its 50-year vision and goals were developed with significant public and stakeholder engagement, including a Citizen's Advisory Committee.

The City of Surrey has many opportunities for urban green growth as it is in the process of building its central core into metro Vancouver's second major office district. The following provides a glimpse of some of the goals found in the Charter:

Economic Goals

- Use land efficiently in terms of compactness, employment densities (e.g., co-location and clustering of businesses and services) and support for high value jobs;
- promote environmental businesses and green building practices;
- develop a vibrant city centre and municipal town centres with excellent public transportation services and connections;
- support local opportunities for technical training, advanced education, research and development; and,
- encourage a life-cycle approach to economic development, considering short-term and long-term impacts of operations.

Environmental Goals

- Interconnect Surrey with rural areas using wildlife corridors, parks and natural areas;
- to the extent possible, protect existing forests and trees and maximize the city's tree canopy;
- protect ground water and aquatic ecosystems;
- preserve clean air for human and ecosystem health;
- minimize the impacts of development on the environment;
- promote use of native species and reduce the impact of invasive species;
- incorporate opportunities for natural areas and urban wildlife;
- protect unique and valuable land forms and habitats;
- minimize solid and liquid waste; and,
- establish guidelines and practices for green buildings.

Implementation, Performance and Reporting

Surrey has established a Sustainability Office to work with city staff and to act as a catalyst for sustainability throughout the corporation. It has also developed the Sustainability Dashboard, a user-friendly, interactive on-line tool that tracks and shares progress on Surrey's nearly 80 sustainability indicators over time. Indicators are sorted into 12 themes:

- growth and urban design;
- transportation;
- economy;
- food and farming;
- water and waste management;
- ecosystems;
- energy systems;
- housing;
- arts, culture and events;
- health and safety;
- education and learning; and,
- access to government. For a look at Surrey's Sustainability Dashboard, go to **http://dashboard.surrey.ca/**

Green Fleet

Surrey is recognized as having one of the top-rated green vehicle fleets in Canada. It has instituted a number of initiatives related to its fleet and to encouraging use of greener vehicles by Surrey residents and businesses.

These include:

- supporting 15 electric vehicle charging stations at locations throughout the city and participating in a Metro Vancouver program to establish a network of 75-150 charging stations throughout the region, in collaboration with the private sector;
- offering free electrical vehicle charging at City Hall;
- a by-law that requires all new gas stations to include alternative fuel sources such as electricity, compressed natural gas, hydrogen or propane;
- diversifying the fleet with hybrid, hydrogen fuel cell, electric and compressed natural gas vehicles, as well as testing new vehicle technologies;
- creating a 100% compressed natural gas municipal waste collection fleet; and,
- developing an organics biofuel facility that will process residential and commercial kitchen and yard waste into fuel, which could be used to power vehicles, including the city's waste collection fleet.

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